

TERRY KEPNER'S

# portable 100

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A MONTHLY PUBLICATION (EXCEPT COMBINED JULY/AUGUST ISSUE)

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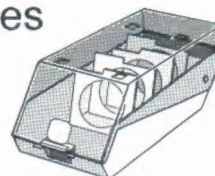
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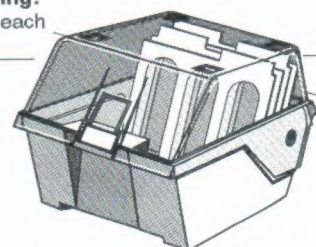
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Hundreds of programs available on disk. The listing tells all...	
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## A WORD ABOUT ROMS

The Tandy Model 100, 102 and 200 computers have room for one option ROM. You must remove one ROM before using another ROM. This is actually quite easy, and several of our members use their laptop for different jobs at different times just by changing ROMs. Programs on ROM run from the ROM and thus do not use RAM. ROM programs offer surprising performance, and greatly expand laptop use. Club 100 offers 3 ROMs.

## THE ULTIMATE ROM II

Contains 4 feature rich programs...

**T-WORD** - a print formatter: controls all printing options including margins, page breaks, headers, footers, page numbering, bold, underline, italic; includes a "pixel plot" mode that displays the way a page will look when printed.

**T-BASE** - relational database: control database development; control data input and reporting; links with T-Word for mail merge printing.

**Idea!** - thought outliner: create outlines and fill in the details; expand, contract and sort outlines as necessary to clarify thinking; useful for planning and scheduling.

**ROM-View 80** - displays up to 60 characters per line while in T-Word, T-BASE, TELCOM and BASIC.

**Extra:** The UR II ROM contains a link to TS-DOS, assuming you have TS-DOS on disk and a Tandy Portable Disk Drive (TPDD); works with both the 100K (TPDD) and 200K (TPDD2) formats.

## ROM2/Cleuseau

Two major programming tools w/TEXT enhancements...  
This is "THE" Model 100/102/200 programming tool !!!

**ROM2:** 8085 macro assembler, disassembler and debugger. Feature rich. Machine language programming experience required.

**Cleuseau:** Programming tools for BASIC; auto-numbering, renumber, pack, unpack and optimize, set break points, etc.

**TEXT Enhancements:** over write mode on/off, block modify upper/lower case, append to paste, search and replace, and more.

## TS-DOS ROM

A true disk operating system (DOS) requiring NO RAM use...

Operates on both 100K and 200K Tandy Portable Disk Drives. Tag files for mass transfers. File compression. Print files from disk. Access your disk drive from within BASIC and TEXT. No pesky disk loading; simply call the ROM and you're working with your drive. Very fast!

## HUMAN ASSISTANCE

10am to 2pm, Monday - Friday

Club 100 is a user group. There are no dues to belong. You are already a member, and thus, may benefit from our collective knowledge with a simple phone call. All questions respected, i.e., RAM expansion or disk drive? - which ROM is best for you? - how to transfer files to DOS and Mac computers? - sell or buy used equipment - how to recover from a cold start - how to access free software from our BBS - etc.

**FREE INFO:** Call or write for free information...

## Club 100: A Model 100 User Group

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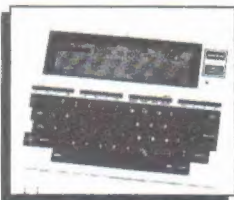
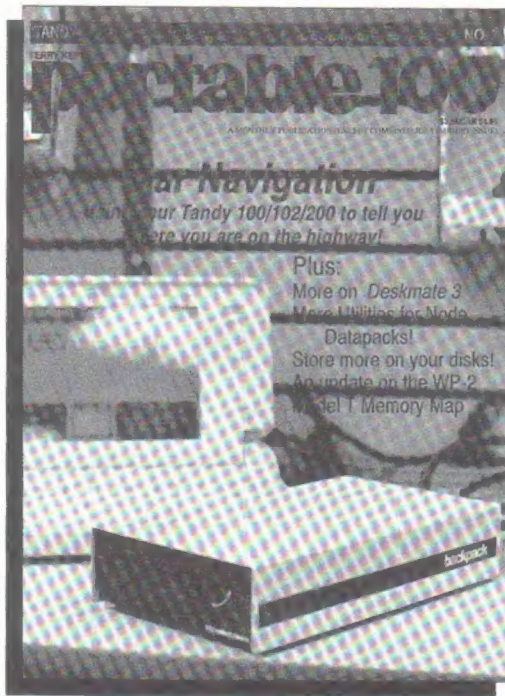
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great!



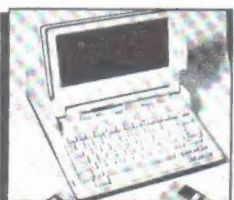
Tandy 102



Tandy 200



Tandy 600



Tandy 1400LT

## MAXI DISK STORES MORE BY USING "LOST SPACE!"

by Terry Kepner

*Increase your MS-DOS disk storage from 720K to 800K  
(or 1.4MB to 1.6MB) without hardware modifications.*

8

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## ROM WITH A VIEW

**H**ere we are again, at the end of another year. It's been a hectic year. We lost Tandy as an advertiser, but picked up several smaller, newer companies in their place. Little by little, we're building the market back up to where it belongs. We lost Tandy because our circulation is so small, around 10,000, instead of 100,000 or 500,000 like the MS-DOS magazines.

It's hard to believe that with so many Tandy 100-type computers out there, that so few bother to subscribe to *Portable 100*. It's a pity, too. Tandy suggests that there are around 500,000 Model 100/102's out there, but we have less than 3% of them in our database. If we could somehow manage to get up to 10%, you would see one heck of a magazine here! As it is, it's a tough road for us with our smaller circulation.

If we had a circulation of 50,000, it would be a snap to convince advertisers that we have a market they want. Perhaps you can help us do that. Why not tell everyone you know who has a Tandy Portable to subscribe? It doesn't cost much, less than \$20 per year, but the support you get in return is worth ten times that price. After all, where else can you get programs and articles about your computer? And, in an emergency, no one knows more than we do about the little computers. For example, just yesterday I received a call from the Secret Service! The caller had accidentally loaded a new file over an old one, then discovered he desperately needed the information from the old file. Fortunately for him, the new file was smaller than the old one, so much of his information was still intact. It had to do with an interview with an important source on a case he was working on. That five minute phone call saved him an incalculable amount of money and time. Naturally, he's going to renew his subscription.

Another call was from a lawyer. He had some extremely important notes on his Portable Disk Drive 100K diskette, and the directory was trashed. We steered him to the utilities he needed to recover his data. That man, too, will renew. I've also talked several times with people who said they had lost valuable information and hadn't known about us, and given up the information as lost. Now that they've found us, they faithfully renew every year. But we need more people to do that. So, spread the word.

Getting readers is only part of the battle. We need more advertisers, too. You've probably noticed the MS-DOS articles we've started printing. In a short while, they will start to bring us some advertisers and let us make the magazine bigger and better, giving coverage to both the Tandy 100-type portable and to the newer MS-DOS portables. If you own an MS-DOS portable and order anything from a manufacturer, tell them you read about them in *Portable 100*. Ask them why they don't advertise with us. With your help we can build the magazine up to a 100+ page unit, with lots more articles and information every month.

ETK

## Toolbox

Manuscripts were typed into Microsoft Word 3.0 on a Tandy 1400 HD, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 3.01. Once there, design decisions on photo, figure, and listing sizes and placements were made. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Normally, the Tandy LP-1000 is capable of emulating only a Hewlett Packard Laser Printer Plus, but with the

addition of the Destiny Technology Corporation (300 Montague Expressway, Suite 150, Milpitas, CA 95035, (408) 262-9400) PageStyler 4.5MB kit, the LP-1000 is turned into a fully-compatible PostScript printer, with all 35 native fonts that are found in the Apple LaserWriter Plus printer. The Destiny PageStyler is available through the Tandy Express Order Hardware system.

Page previews were output from the LaserPrinter. When everyone was satisfied with the appearance, final pages were output and artwork and lineart ads were positioned. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.

# portable 100

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Terry Kepner

## EDITOR-IN-CHIEF

Terry Kepner

## EDITOR

Mike Nugent

## NEW PRODUCTS EDITOR

Linda Tiernan

## CONTRIBUTING EDITORS

Paul Globman

Michael Daigle

## CIRCULATION MANAGER

Bob Liddil

## ADVERTISING DIRECTOR

Pamela Dass

## BULLETIN BOARD SYNOP

Chris Courson

## ELF-FULFILLMENT

Susan Pond

## Portable Computing International Corporation

145 Grove St. Ext., #21, PO Box 428  
Peterborough, NH 03458-0428

Editorial  
603-924-9455



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# "GENDER GAP" STUDY

**L**ooking at the computer industry as a whole, it is interesting to see the imbalanced participation level of women. There are many theories regarding the "gender gap" in computer usage, most of them undocumented.

I have begun an extensive research study on women and computers. I would appreciate hearing from any of your female readership interested in completing a survey for this study.

**Peggy Cole**  
P.O. Box 161775  
Cupertino, CA 95016

## extRAM CLARIFICATION

I just devoured the November issue of *Portable 100*, from cover to cover, and think you guys are doing a terrific job. I would like to offer a minor clarification to Stan Wong's article, "The Many Personalities of extRAM."

The (L)oad command in SLX.CO will load main RAM with all the files stored in the extRAM bank, replacing the files that are currently in RAM. On page 18, the last paragraph of the BANK-SWITCHED MEMORY (SLX) topic, Stan suggests that the (L)oad command acts upon one specified file. This would be the function of EXTMNU.BA. Keep up the good work!

**Paul Globman**  
Sunrise, FL

## SCREEN DUMP WOES

I succeeded in copying your CHDUMP.BA screen dump program ("Twisted, Shrunk, and Packed," May '90), including the correction correction for line 400: `FX=REL+L10`. I loaded the program and made it run as per your article; however, the enclosed printed samples reveal a printing problem, in that there is a horizontal separation in each letter.

My printer is a Star Gemini 10X, which I understand is compatible with the Epson printer. I'd appreciate your analysis of the problem.

**Harry I. Becker**  
Camarillo, CA

Unfortunately, Harry, compatibility is often a "mostly" kind of thing. First let's tackle a problem you didn't mention. The

screen dump should be indented 10 spaces from the left margin, and yours isn't. Here's why:

The program sends commands to the printer to set certain parameters. (Please refer to the DUMP.CO source code at SET, on page 30, near the middle of the right-hand column.) The first command sequence, `ESC l n`, sets the left margin to `n` (in this case 10) spaces. The Gemini, however, uses `ESC M n` for this. (Lucky for us, my daughter Shannon has a Gemini, or I wouldn't have known that!) In CHDUMP, that margin setting command is contained in the last three DATA values (27, 108, 10) in line 810. By changing the 108 to 77, you'll be changing the `l` to `M` and should then get the necessary indentation.

Now for the problem you mentioned. Since CHDUMP sends only a carriage return (CR) to the printer to end a line, a

---

**We can add  
linefeeds at the  
computer with  
software that  
adds LF's to  
outgoing CR's.**

---

linefeed (LF) character must be added at some point to each CR in order to advance the paper. Otherwise, lines would all print right on top of one another.

We can add linefeeds at the printer by setting a switch to make it add LF's to incoming CR's, or at the computer by means of software that adds LF's to outgoing CR's. Because your paper is advancing, you're obviously adding the required LF's somewhere.

Perhaps, then, your linefeed value (how far the paper advances in response to the LF character) is too great? The second command

sequence at SET, `ESC 3 n`, sets this value, telling the printer to advance the paper `n`/180-inch when it receives a linefeed character. In DUMP.CO `n=22`, for 22/180-inch, and CHDUMP uses `n=24`, for 24/180-inch (since that looks better on the printers I use.) On the Gemini, though, that command advances the paper `n`/144-inch—roughly 25 percent more! And that, I suspect, is your problem.

The `ESC 3 n` sequence is contained in the first three DATA values (27, 51, 24) in line 820. Try a smaller value of `n` by changing the 24 to, say, 20, and keep experimenting until it looks right on your printout.

That should clear it up, but if not, here are some other ideas:

Your screen dump reveals that you have Lucid and some RAM banks (PG Design?) installed. If either contains a software linefeed utility, be sure the LF utility is turned off; use only the auto-LF switch on the printer (fourth position on the Gemini's DIP switch #2.) Otherwise, you'll be adding LF's at the computer and at the printer, and that's one too many. Also, be sure the switches are set to print a line upon receiving a CR, rather than waiting for the printer's internal buffer to fill. (I recall Shannon's Gemini having some weird little setting like that.)

Keep us posted, Harry, so we can share the results with other Gemini owners.

-MN

[Editor's note: Harry did indeed keep us posted. He's confirmed that the suggested changes to line 810 produce the desired 10-space left margin. And experimenting with the `n` value in line 820, he reports that 16 is the magic number for the Star Gemini 10X. Now his screen dumps look fine, and we're glad to share his results with other Gemini owners. Thanks, Harry!—MN]

## "WORDSTAR CONVERSION" UPDATE

Regarding my article, "The WordStar Conversion" (April '90), your readers might like to know that I've been using WordStar 4 for the past year, and that the commands are the same, with one exception: Where the article mentions reformatting text in WordStar with `^QB` or `^QQB`, those using WordStar 4 should substitute `^QU`. And using the "shorthand" keys in WordStar 4, you can put all



the commands on one key.

**John LaTorre**  
Salinas, CA

### "ABSOLUTELY RIDICULOUS"

Ed Juge's sales pitch for Tandy (I/O, May '90) fell on deaf ears with this reader. Yes, the Model 100 was a revolution in 1983, thanks to Radio Shack's impetus and energy; overnight, it changed the face of journalism, spawned the most innovative programming applications, and heralded the laptop era. It remains the computer of choice for this writer.

But times have changed, certainly at my local Radio Shack. I rushed to buy the first WP-2, until I realised I was peering into 8 lines of fly-spots floating in a swamp. But it uses the Tandy Portable Disk Drive, right? Wrong! Not the PDD-1, and not with a 9-pin serial port. Even the 9-25 serial adaptor Tandy tried to sell me simply didn't fit. Just who was the project manager on that development? Did he also write the manual? Even after Stan Wong sang its praises in his May '90 article, and I'd visited Tandy for another look, I could really only conclude: "Whoops! RS."

So how about the 1100 FD? Remove \$200 and DeskMate for the Panasonic copy. That EC-345 Data Bank sure looks like the Casio SF-7500 Digital Diary to me. And what about all the PC clones? For, make no mistake, that's just what they are: clones. Any issue of *Computer Shopper* has maybe a hundred comparable clones, usually priced far less than Radio Shack. Is the difference worth the price of DeskMate, or the skilled store personnel who sell NiCd's for charging inside the Tandy 102?

Obviously, it is to many people, with Tandy computer sales outstripping IBM in a recent survey. However, it's not difficult to conclude that Tandy's skill in designing innovations has struck a poor balance with marketing for volume.

Mr. Juge would have given his company more credibility by embracing the idea of a Model 103, combining the success of the M100, the capacity of the failed Atari Portfolio, maybe 16 readable screen lines, a 1200 baud modem, and LapDOS compatibility. After all, there are a lot of writers out here who would love to see the Model 100 grow up for the '90's. Translate that into word power!

With the right machine and Tandy's obvious marketing muscle, there could

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so easily be another mini-revolution.

**Michael T. Synnott**  
San Diego, CA

### NOT SO RIDICULOUS

Congratulations! You have the dubious distinction of being the recipient of my first "Letter to The Editor." It is in regard to the two previous letters on the Tandy 1100 FD computer.

The first letter, by Michael Daigle, got my dander up. Almost enough to write a rebuttal at that time. But being naturally inclined to laziness, I promptly forgot. However, the second letter, by Ed Juge, reminded me, and I wish to chime in

*The term  
"good computer"  
depends on what  
one considers  
desirable  
in a laptop.*

with my agreement that this is a good computer.

The term "good computer" is, of course, dependent upon what one considers desirable in a laptop. I was at first skeptical when I heard this one did not have a backlit display. After squinting at the 40-character display of my Tandy 200, I was convinced that a backlit display was a must for any 80-column display. I was pleasantly shocked to see how readable the display of the 1100 FD was.

## Data Acquisition and Control Products for TANDY'S M100/102

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Basically, I wanted a modestly configured MS-DOS compatible with 2400 baud modem (optional), so I could call the system at work for troubleshooting, as well as other odds and ends. It had to be around \$1000, as I had to buy it myself, and I am not rich. The 1100 FD fills the bill nicely, and the long battery life is a nice little perk.

As for the lack of a carrying handle: Excuse me, but I simply don't see the big deal. After all, the thing is about the size of a notebook, and I feel completely comfortable carrying it tucked under hand just like a notebook.

And ditto for the complaint about the keyboard. Granted, it doesn't have the feel of my trusty ol' Apple IIe, but then again, nothing else does, either (in my judgement). I have no difficulty typing at full speed on it, and prefer it to some of the mushier marshmallow keyboards floating about.

In summary, I have been waiting a long time for a computer like this little beauty to come along, with precisely these qualities (size, capabilities, COST, and LOCAL hardware support).

**Skip Thompson**  
Tacoma, WA

### ?IO—CORRECTIONS

In GLOBAL PERSPECTIVES (November '90), the program listings for RUN.BA and CMD.BA were reversed inadvertently (as if we'd do such a dumb thing on purpose!). But since the first line of each program contains its own name, y'all already knew that, didn't you? (If not, then that might explain the weird results you've been getting!)

-MN  




# Know Airs Hear

(ore Eye Dew Knot Think Theirs A Problem.)

What's with the title, you ask? Well, I just wanted to point out that here in the year 1990 A.D., here at the zenith of computer technology as we know it, yes, here at the dawn of the third millennium, in an age of laser-surgery and orbiting telescopes and processed cheese spread in pressurized cans, it is possible for you to be told by your word processor's spell checker that the title of this column is okay.

To which you cleverly reply: So what?

Well, I'll TELL you so what. We put too much faith IN technology. We also put too much emphasis ON technology. The result is often the mis-application OF technology. We can see many examples of this in our everyday lives. For instance ...

Picture the average American Suburban Domicile. Within, your average American Yuppie will avail himself of such conveniences as a remote controlled TV, remote controlled stereo, remote controlled CD player with 5-disc rack, automatic garage door opener, and probably a battery powered coffee stirrer. The result? His home life becomes so sedentary that he has to go out and buy himself an exercise bicycle—with digital odometer, of course.

Technology begetting technology.

Nowhere is this trend more apparent than Computing, 1990. For instance, take the humble IBM PC or the wonderful little Mac. Over the years, software for these machines has mutated from simple, quick solutions to ever larger versions that add features of questionable benefit. Each new version becomes more complex. The documentation swells. There are more commands to memorize. The code grows; what once required one drive now requires two; from two regular drives to a high density drive; from high density drives to a hard drive.

This process continues until you wind up with a bloated, lumbering hog of a program, a corpulent reminder of a once elegant solution. Sound familiar? It

will to those of you who have spent time with products like the current versions of *Lotus 1-2-3*, *WordPerfect*, *PC Tools Deluxe*, or anything else that comes with literally HUNDREDS of pages of documentation.

It doesn't stop with software, either. In ten years we in the PC world have gone from 4.77MHz PC's to 8MHz XT's to 12MHz AT's to the current crop of 20MHz SX's and 33MHz 386 screamers. The magazines are already telling us what to look for in 50MHz 486's. The Mac has suffered a similar fate. And the funny (not "ha-ha" funny, but more like "If anything happens to Bush, our President will be Dan Quayle" funny) thing is, it's going to be YEARS before most software is able to take advantage of the 486 platform. Not weeks. Not months. Years.

*Don't peek out  
until all the  
nasty noises stop.*

Goofy, huh?

Ben Franklin once said "In all things, moderation." The computer industry as a whole would do well to reflect on the value of those words, but let's not kid ourselves: that's probably not going to happen for a quite a while. In the meantime, it's a feeding frenzy in the computer pool, and if you stick your foot in the waters right now you'd better count your toes when you're done.

Pick up any current popular PC magazine and look at the feature articles inside. Just how significant to the average reader are the comparisons of color lasers printers, the reviews of \$10,000 color 386 laptops, the evaluations of

300meg hard drives, or the articles on ways to get more performance out of your 33MHz 386.

Did you know that your 28 millisecond hard drive is now officially a TOAD? Well, it is; the new hard drives will access data at 9 milliseconds—for those of you who don't have 19 milliseconds to spare. How fast is a millisecond? Let's demonstrate. Close your eyes and imagine Congress voting themselves ANOTHER pay raise. How long did it take for you to suddenly think of public lynchings? OK, that's about 5 milliseconds.

When is it all going to end? That's easy—it's NEVER going to end. So if you spend time and money and effort trying to "keep up" with the industry, you're going to leave the '90's a lot poorer than you entered. A better strategy might be to simply decide what you want in a computer system, and how much you're willing (or able) to pay for that system.

Then just sit back and wait for the technology race to bring the price on that system down to your level.

As for me, I know that in three or four years I'll be able to buy a 386-based notebook (UNDER 3 pounds) computer with enhanced battery life, a VGA level display, and dual 2.88 meg 3.5-inch drives for about six or seven hundred bucks. Maybe even a color version for a couple hundred more. That sounds nice to me. Very nice.

But I can wait.

In the meantime, I'm going to officially declare the 1990's to be "The Decade Of The Storm." I'm going to take my faithful IBM AT clone (with three 3.5-inch 1.44 meg disk drives and NO hard drive) and my trusty Model 102 to bed with me, and we're going to get real cozy, we're going to pull the covers up over our pointed little heads, and we're not going to peek out until all the nasty noises stop.

Puh-LEEESE don't talk to me about 486's. Or about *WordPerfect 6.0* or *Lotus 4.0* or *Windows Any.0*, because I'm not listening. I wouldn't be a volunteer beta



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tester, and I'm sure not interested in paying (with my money or my time) for the privilege.

So I guess I won't be spending \$100 on a memory manager to convince my \$3,000 386 that it can actually USE the 4 megs of RAM I bought for it. I guess I won't spend three months learning to use *SuperProgram 5*, only to find out that, to stay on the cutting edge, it's now time to spend another \$75 to upgrade to the brand new *SuperProgram 6* (featuring ALL NEW commands!). And I guess I won't lose sleep poring through the hundreds of pages of *Microsoft Windows* docs, supposedly learning how to make my system easier to use.

(Multitask? Right. I can't even chew gum and walk straight at the same time. To me, multitasking just means being able to screw up several things simultaneously.)

Nope, I'll just "make do" with the software and hardware that everyone was drooling over a couple of years ago, and I'll be just fine. And so will you.

And if, in the mall or at the meeting or on the plane, some power user sits next to you and sneers at you as he kick-starts his six grand, 20-pound 386 VGA laptop with the 200 meg hard drive, don't feel bad. Just casually turn your Model T over so he can see the bumper sticker on

the back.

The one that says, "Don't Laugh—It's Paid For."



PS: Hey, gang, it's time for me to call upon your collective wisdom once again. When I asked for ideas about the "Model 300," I got some terrific responses.

Well, I'm looking for more ideas. This time I'm gathering up the best "Tips & Tricks" I can find for a future column. I don't want things like specific programming tricks (sorry, Tony, Paul, Van, etc.), because we could easily fill an entire magazine with those.

What I'm looking for are tips to help people in their everyday lives with their Model T's. For example:

I have a DynaShield hard shell cover for my M102. It's a clear plastic cover that protects the keyboard and display. To the inside, facing out, I've taped reduced photocopies of handy information. Things like a current calendar, all the control codes for my *Sardine (T-Word)* ROM chip, along with the *CALL* to fire it up in the event of a cold start. Speaking of which, I also have a cold start file recovery program taped there. In addition, there's the installation program for my

Node RamPac, metric conversion charts, and about 20 phone numbers I wouldn't want to be without if my Model T *did* cold start.

If you don't have a DynaShield, no problem: Just tape your info to the back of your Model T, and seal it under clear packaging tape so it won't get damp or smear.

Or, maybe you've found a handy little trick to simplify things for yourself. For instance, I've got my To-Do file separated into individual months. Each month is separated by a little quick reference 40-column calendar, like so:

1990:SSMTWTFSS:MTWTFSSMTW:TFSSMTWTFSS:SM  
DEC :123456789:0123456789:0123456789:01

No big deal, but it's just a little trick that I've found very handy. That's what we're looking for here. So come on, fire up your trusty Model T and blast me a note. You can reach me at:

CompuServe: 76166,3303  
GENie: DAIGLE [Michael]  
US Mail: Michael Daigle, 2125 North Farragut, Portland, OR 97217

I look forward to hearing from you. See you next time ...

By Michael Daigle



## COMPATIBILITY:

1100FD, 1400HD, and most other MS-DOS portables.

# MAXI Disk Stores More By Using "Lost Space!"

*Increase your disk storage from 720K to 800K  
(or 1.4MB to 1.6MB) without hardware modifications.*

*by Terry Kepner*

**D**id you know that almost 80K of space is wasted by MS-DOS every time it formats a 720K disk? And that 160K is lost in limbo when it formats a 3.5-inch 1.44MB high density disk?

Just think of all the times that you needed only a little bit more space to fit all your files on a single disk. Or, if you have a hard drive, think of those extra disks you had to buy to complete your backup operation.

And think of the money you would save by not needing so many disks, not to mention not carrying as many disks when you travel (one less disk to lose...).

Well, with *MAXI Disk*, you can store more on your disks without anguish or travails.

## THE SOFTWARE

*MAXI Disk* is a three piece software package: *MAX3.COM*, *SMA3.COM*, and *MINSTAL.COM*. The most important piece is *MAX3*, the program that does the work for you. This program does the actual formatting, and, depending on your hardware setup, will work with both 5.25-inch and 3.5-inch disks.

When you run *MAX3*, it presents you with a menu screen divided into four sections. The top left portion lists the various format options available in the program (360K, 420K, 1.2MB, 1.4MB, 720K, 800K, 1.44MB, and 1.6MB), the top right lists disk options (A or B target drive, whether to verify the format, whether to include system files to make a bootup disk, and the location of the system drive), the middle portion is a status window, and the lower section is an auxiliary window for setting other parameters (set background color, set

MAXI Disk v3.02b		Copyright (C) 1988,89,90 Herne Data Systems Ltd.	
<b>Disk types:</b> 360 k byte 420 k byte 1.2 M byte 1.4 M byte  720 k byte 800 k byte 1.44 M byte 1.6 M byte		<b>Formatting Options:</b> Drive = 1.44meg  <b>Target Drive:</b> A:  <b>Verify:</b> NO      YES  <b>Include System:</b> NO      YES  <b>System Drive:</b> A:    B:    C:    D:    E: 40 Cylinders                      (Internal boot code)	
Use    to select DISK TYPE to format.  <Tab> to change window; <Enter> to start format; <Esc> to Quit.			
<b>Additional options:</b> <Ctrl> - B set background color      <Ctrl> - F set foreground color <Ctrl> - E set boot block mode        <Ctrl> - H turn aux. menu on/off <Ctrl> - decrease # cylinders        <Ctrl> - increase # cylinders <Ctrl> - S save current defaults			

The Maxi Disk display. On the left are your format choices, on the right are your options.

foreground color, turn auxiliary menu on or off, set boot sector block mode, increase or decrease the number of cylinders to format, and save current defaults).

You start out in the top left window, where you use the up and down arrows to select the format you want, restricted by your computers equipment, of course. If all the parameters are correct, just press *ENTER* to start formatting. Otherwise, after selecting the density, you press the *TAB* key to move to the next item, *Target Drive*, in the right window. The arrow keys let you select either A or B as the target drive. Pressing *TAB* again takes you to the next entry, *Verify Format*. Including system files on your target disk is similarly selected, as is the drive location of your current system. Pressing *ENTER* starts the formatting process.

The system prompts you for a disk in the target drive, then starts working. When it finishes, it reports the space

available on the newly formatted disk and how much space was lost to bad sectors. Now you are ready to format another disk.

## PROBLEMS

Normally, the program operates in *AUTO* mode with all the parameters preset. The information on drive type, capacity, and so forth, is read from your computer's *BIOS* files. Some computers, unfortunately, have a problem with this in that the *BIOS* information is inaccurate. While it doesn't affect standard MS-DOS functions, it does cause problems for *MAX3*. The solution is *MINSTAL*. To correct the formatting problems resulting from *BIOS* mis-information, you need to run *MINSTAL* only once to set up your parameters for *MAX3*.

That isn't the complete cure, however, as some computers still will have problems reading and writing to the extra sectors *MAX3* added to your disk, giving you media errors. The *SMA3*



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### MAXI Disk

Are you tired of running out of space on your MS-DOS floppy disks? **MAXI Disk** can give you 420k on a 360k drive, 800k on a 720k, 1.4 meg on a 1.2 meg and 1.6 meg on a 1.44 meg. Of course, **MAXI** also formats normal DOS disks (360/720/1.2/1.44).

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Tiverton, ON, CANADA, N0G 2T0

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program provides that solution. **SMAX** is a small 2,416 byte program that you run so your computer can use the 800K or 1.6MB diskettes.

**SMAX** is a Terminate and Stay Resident program (TSR). This means you run it once each time you start your computer, and it hides in RAM, making an appearance only when you want to use an extra-capacity diskette.

I tested the program on both an 1100FD and a 1400HD, both of which formatted 800K disks without any trouble, then refused to work with them, reporting physical media errors. Running **SMAX** fixed the problems and both machines copied files back and forth flawlessly (except for some bad sectors on one disk, located in the middle of it).

The office Tandy 4000 didn't even need **SMAX** to read and write to the two disks created by the 1100FD and the 1400HD.

### EXTRA TRACKS

One of the unusual features of the **MAX3** program is that you can increase the number of tracks on your disk, if your computer's disk drive will support it. Most disk drives can handle more than the 80 tracks MS-DOS uses on 3.5-inch diskettes (or 40 when you use 5.25-inch disks). Usually there are only one or two extra notches on the drive-head arm, but that can mean an additional 9K to 20K for each track beyond the standard ones that you add. Just a few tracks can make a big difference.

The maximum **MAX3** allows on a 40-track machine is 45 tracks, and the maximum on the 80-track drives is 85 tracks. The actual numbers you may get are very much a chance arrangement, and can never be reliably predicted.

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### TMN ASSEMBLER

from Tri-Mike Network East.

This assembler requires less than 3K RAM and is relocatable. It assembles source code from any file or device; accepts data in hex, decimal, or ASCII; creates a ready-to-run .CO file directly on the Menu or an optional trial assembly. Six built-in macros make programming even easier. Output all or any portion of the assembled listing to screen or printer, with optional user-inserted pauses. **Manual includes extensive RAM and ROM maps!** (Model 100/102, 200, NEC 8201/8300) Cassette version only—**\$39.95**

### TMN DEBUGGER

from Tri-Mike Network East.

Who ever heard of an assembler without a debugger? **TMN** offers one to use with the above assembler. (Model 100/102 only). **\$36.95**—Portable Disk Drive disk. **\$39.95**—Standard Tape Cassette.

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### SOME THOUGHTS ON USAGE

Given the problems with some computers' BIOS files, the **MAXI Disk** package isn't for everyone. If you trade disks frequently with friends and colleagues, you have to first determine if their computers require **SMAX**. If they do, then you must make sure each of them has a copy of **SMAX** available before you give them any special-format disks.

Legally, this isn't a problem because the publishers of **MAXI Disk** specifically state that you freely can give copies of the **SMAX** program to your friends and colleagues for this purpose. From a practical point of view, your friends might not be too enthused about keeping around a special utility just so you can trade disks with them. On the other hand, once they see how well the system works and how inexpensive it is, they will probably buy a copy of it, eliminating the problem.

If you decide to add extra tracks to your disks, assuming your drive has the extra cylinder notches, this will further restrict your ability to trade disks. Even though you and your friend might have identical 1100FD computers, there is no guarantee that both drives can access the same number of extra cylinders. If they can do that, fine, you're both in business, but be forewarned that someone else's computer might access only one of the

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**CRDFIL.HEX**: **CRDFIL** program code in Intel Hex format, which may be loaded from a PC (5.25 inch disk) into EME Systems extRAM storage device/ROM emulator, with software from their manual; for the 100/102 only: **\$49.95**

**CRDFIL.EXT**: **CRDFIL** program code in binary form, which may be loaded into the EME Systems extRAM from a Tandy Portable Disk Drive (1 or 2) using recently released **R2D2X** software (contact EME for software); for the 100/102 only: **\$49.95** Also available in a DVI compatible version on special order.

Sorry, but **CRDFIL** is not available for the Tandy 200, NEC, OLIVETTI or KYOTRONIC computers.

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extra cylinders, if any.

Using this system for hard disk backups can make a big difference in time and money. You don't need as many disks, and the fewer diskswaps saves you time.

### SUMMARY

This is a good package for people who work entirely or primarily with only one computer. If you don't intend to use the extra tracks feature, the package is great for sharing files among friends or colleagues. Plus, the retail price is low enough that a company can afford to buy copies for all their workers without breaking any budgets. Give this package a try yourself, I think you'll be pleased with the results.

### MANUFACTURER'S SPECIFICATIONS

Herne Data Systems Ltd  
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An MS-DOS package for adding more usable disk space to your diskettes.



# They Laughed When I Sat Down To Word Process

*(Further Impressions Of The Tandy WP-2)*

*by Michael Daigle*

**H**i gang. No, you're not on the wrong page. Those of you who diligently turn past my column each month to get to the good stuff may be surprised to find me here. Well, when nobody was looking, I snuck this article into the company computer.

That's right—I'm outta my cage.

If you're one of the three or four people who regularly read my column **THE IDEA BOX**, you may recall that a few issues back I gave my off-the-cuff impressions of the then new Tandy WP-2 Portable Word Processor. No need to re-open old wounds here; suffice it to say that I was less than enamored of it.

Therefore, it will surprise absolutely no one who knows me well to learn that I just went out and bought one.

Why? Perhaps it was temporary insanity. Perhaps it was an after-effect of the Harmonic Convergence. Perhaps I was on the rebound after learning that Connie Chung was plotting to have someone else's baby.

Or perhaps—just perhaps—it was actually a good move on my part.

Now that I've had the WP-2 for a few days, I've decided that I may have been a little hard on it in my initial assessment. So, in the interest of journalistic objectivity, fair play, and filling space, I humbly present my official WP-2 scorecard, called—for lack of a better term—My Official WP-2 Scorecard.

Both the good and the bad of it. Let's begin ...

**GOOD:** The display. Like the Model 100/102, it's only 8 lines—but it's a breathtaking, panoramic 80 columns wide!

**BAD:** The display. Unlike the Model T's, the WP-2's characters are tiny and hard to read. This effect is magnified by

the colors involved: dark blue characters against a metallic green background wouldn't have been my first choice. Or my twentieth. PS: It's 1990. Isn't there a way to use non-glare plastic to cover the display? Please?

**GOOD:** The price. Often on sale at Tandy for under \$300, the price really is remarkable for a device with this much to offer. I can't praise Tandy enough for being the first to offer this much potential for this little money.

**BAD:** Lack of support. As of this

---

## Perhaps it was an after-effect of the Harmonic Convergence.

---

writing, the WP-2 has been on the market for about a year, yet so far, I haven't seen a single application offered—by Tandy or anyone else—on the clever 32K Expansion Cards that are the WP-2's version of the Model T's ROM socket. The ability to RUN applications is built into the WP-2, supported by the operating system. So where's the beef?

**GOOD:** Internal expansion. The WP-2 will accept a RAM chip that acts as an internal RAM drive. While Tandy mysteriously offers only a 32K chip (for \$50), a MUCH better choice would be the 128K

chip sold by MicroMime, Purple Computing, and others. At under \$80, it provides four times the storage of Tandy's chip. Believe me, you're gonna need it. Because ...

**BAD:** ... something goofy's going on. After YEARS of listening to us karp and kvetch about the tiny workspace available on the Model T's, the WP-2 was brilliantly designed to provide us with a total word processing workspace of (sound of trumpets) a huge and wondrous 22K OF RAM! That's right, kids! 22K! (...sound of kazooos...) Need to write a single document 25K long? Forget it.

Why? Who knows? Who cares? I'm not going to ask. I'm sure there's some perfectly logical reason for this decision. A technical reason. A marketing reason. Maybe even a reason that doesn't involve engineers imbibing considerable quantities of alcohol late at night. Whatever the reason, it's built, it's done, and we're probably stuck with it. The WP-2 is a great machine crippled (but not killed) by two glaring flaws, one big, one small. This is the big one.

**GOOD:** The keyboard. It may not feel quite as good to me as a Model T keyboard, but it's very, very close indeed. For some reason, it seems to be almost as vulnerable to glare as the display is, but oh, well ... One bright point is the cursor keys. They're REAL KEYS, not the Model 100/102's diminutive Chiclet-inspired buttons.

**BAD:** The Power button. It's mounted flush in the upper right-hand face of the WP-2. For some reason, that's EXACTLY where I grab the machine when I handle it when it's in its case. Often I'll take it out of my backpack, remove the WP-2 from the case, and discover that several hundred random characters have been



inserted into my document when I unknowingly tossed it into my backpack with the power on. I've already rigged a fix for this by taping a piece of thin, firm plastic over the button. PS: I also wish there was some visual indicator to reflect the status of the Caps Lock key. I know, I know: bitch, bitch, bitch ...

GOOD: The PHONE and CALENDAR keys. These keys allow you to view and edit a special document (a schedule or a phone list) without having to quit the document you're working on.

BAD: You probably won't get much use out of the PHONE or CALENDAR functions, because you'll need to keep as much of that precious 22K of RAM as possible free for your actual work.

GOOD: The size and weight. Nothing else on the market comes close to this. Even the 102 seems almost cumbersome and bloated by contrast. It's remarkable that something this small works so well.

BAD: The WP-2 is a word processor. I'm a writer. One would think that this machine was made for someone like me. But I can assure you that it wasn't made BY someone like me; nobody who knows anything about writing would have made the mistake that is embodied in the WP-2: there is NO WORD COUNT FEATURE! C'mon guys—no word count? On a word processor? Somebody needs to be shot.

This is the other serious flaw that I referred to earlier. The reason it's so serious is that writers often write to specific word counts. I knew this article needed to be around 1200—1400 words before I even started to write it. So even though I began this article on the WP-2, I had to finish it on my desktop PC, just so I could get an accurate word count. This omission may not bother business people using the WP-2 to write the occasional memo, but to a writer, a word processor without a word count feature is like a car without a fuel gauge.

Speaking of word counts, I see that it's time to wrap this up. Yes, the owner's manual is laughable. Yes, the operating

## The 102 seems bloated.

system is as convoluted as the current Administration's economic policies. Yes, you will have to become a Zen master before you can transfer a file from the WP-2 to your PC. In the final analysis, the WP-2 is imperfect. What isn't?

But despite the flaws, I'm growing fond of it. Every bad point is offset by a good one, and the sexy little black and green WP-2 gives a lot of power to people who have pretty much been ignored by the Big Boys of computing.

This will be a wonderful platform to build on. If the problems above can be addressed in a future version (WP-3?), the portable word processor could become an invaluable resource for millions of people who have little need of the scope, complexity, and expense of a full-blown portable computer.

As for the WP-2 of the present, I think it represents a wonderful opportunity for users and developers alike. The Expansion Card slot is clearly the gateway to unlocking the WP-2's true potential. Slick programmer/entrepreneurs we haven't yet heard of will cut their teeth on the WP-2 the way guys like Mark Eppley did on the Model 100 a computer generation ago.

In the meantime, I'll be right here, WP-2 in one hand, wallet in the other, just waiting for the first good application or utility to come down the pike.

I sure hope it's a word counter. □

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COMPATIBILITY: All MS-DOS computers.

# DeskMate

*Here's a graphic user interface that works!*

*by George Sherman*

**T**his is the second of a series of articles exploring *DeskMate* and its commercially available add-on's. In this particular article we will look at customizing the program for personal use. As before, my primary source for information regarding *DeskMate* is the book, *Getting the Most Out of DeskMate 3*, by Michael A. Banks.

One of the major ideas I gleaned from Mr. Banks' book, the one which helped me the most, was the knowledge of how to customize *DeskMate*. Most people are bewildered by the many files in *DeskMate* and their confusing suffixes. They also have no idea which programs go with what files, or if certain programs are related and must be available to each other.

If you are like me, you just tend to leave the disks alone and use them the way they come to you. Many of the files on a distribution disk are superfluous, so the result of this "leave it alone" decision is that those extra files are just taking up space on the disks which you could better be used for something more productive.

What I wanted for my use, and I realize your needs most likely will be different from mine, was a single disk which would both boot up my computer and at the same time load *DeskMate* and the programs I found most useful. By seeing how I did it, you can do the same for yourself.

*DeskMate 3* still requires that you have two disks in a two disk machine. Therefore I put the programs on disk A and the resultant data files on disk B. This has worked well for me.

My initial task, after formatting a disk, was to transfer to it all programs and files necessary to boot up my computer. These vary from machine to machine so

you had better check and see which of these is necessary for your particular computer. I included some other programs and TSR's (Terminate and Stay Resident program) which I like to have handy. Then using *Getting the Most Out of DeskMate 3* as a guide, I chose the necessary programs and files to fire up *DeskMate*. These I transferred from the various disks that came with the package. Next I established a subdirectory on disk A called \RMDFILES. To this subdirectory I transferred the following files: *DESKTOP.CFG*, *DMCSR.CFG* and

---

**It does not matter  
what disk I have  
in drive A,  
*DeskMate* will run.**

---

*DMGUF.R89*. These particular files are required for most everything *DeskMate* does, and nearly all *DeskMate* programs will look for one or all of these files. I also added my personal dictionary, *USERDICT.SPL*. The reason for this latter action will, I hope, become evident as we progress. In my *AUTOEXEC.BAT* file I included the following lines:

```
COPY RMDFILES\*.* C:
COPY COMMAND.COM C:
PATH A:\C:
SET COMSPEC=C:\COMMAND.COM
```

and later in the same file:

```
COPY C:\USERDICT.SPL A:\RMDFILES
COPY C:\*.CFG A:\RMDFILES
```

If you do not understand subdirectories, paths, or *AUTOEXEC.BAT* files, please check your DOS manual. Basically, what is happening here is that when I start my computer using this disk, before running *DeskMate*, the above four files (*DESKTOP.CFG*, *DMCSR.CFG*, *DMGUF.R89*, and *USERDICT.SPL*) are transferred to my virtual disk, a section of my computer's RAM designated as disk C. Also, *COMMAND.COM* is loaded to disk C and the computer is told to look for it there.

By setting my *PATH* statement as I have, the computer will first try to find the necessary files on disk A: and then look on disk C. The end result of this is that it does not matter what disk I have in drive A, *DeskMate* will run and the desktop will reappear when the program is finished. I am relieved of having to constantly switch disks to load these important files, they are always available on my virtual drive C in RAM.

My user dictionary often changes as I add more words to it, and *DESKTOP.CFG* and *DMCSR.CFG* are constantly changing, depending on what is done with the desktop and its files. As a result, I have instructed the computer, through my *AUTOEXEC.BAT* file, to copy these three files back down to disk A, subdirectory \RMDFILES, each time I exit *DeskMate*. If this is not done, then all the changes are lost when the computer is turned off.

Once I had my boot up disk the way I wanted it, I next considered what I wanted and did not want on my "desktop." Using the *DeskTop* pull-down



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menu (F7) and its program *Remove*, I removed *Teach Me*, *Text*, *Calendar*, *Address*, *PC-Link*, and *AutoConfig*. This left only *Month* and *Programs*. Following the advice of Michael Banks in *Getting the Most Out of DeskMate 3*, I then moved *Programs* to the upper left corner of the desk. Since all *DeskMate* oriented programs appear in this list box, putting it in this position means they can be operated from the opening screen with a single key stroke. A neat time saver.

Then I moved *Month* to the upper right corner. Using the *Display* option of the *DeskTop* menu I next displayed *Filer*, and *Others*. At the same time I changed the shape of the list box so that *Filer* was twice as long, and *Others* twice as wide. Lastly, since I use *Q&A Write*, a commercially available and much enhanced version of *DeskMate's* original *Text*, and *Print Magic*, a commercially available program which creates banners, letterheads, greeting cards, flyers, etc., I had to create boxes for them. Again, I went to the *DeskTop* menu, and used the program *Create*. I told it what label I wanted on each list box, what program each list box was to run (QWD.PDM for *Q&A Write*, and PM.PDM for *PRINT MAGIC*), what data files to look for (DOC and PMP), and what disk to go to

find them (B). After completing each list box and pressing *ENTER*, I was moved to the desktop and given a potential location for that list box. I moved each to where I wanted them and pressed *ENTER* to display that particular list box.

One special note here, I still consistently use *Calendar* and *Address*. However, because these two programs al-

## I still use Calendar and Address.

ways access the same data files, PERSONAL.CAL and PERSONAL.ADR, and because they can be run directly from the *Programs* list box, I see no need for them to have a separate list box or button. Removing them from the desktop and running them from *Programs* is based on a recommendation by Michael Banks in *Getting the Most Out of*

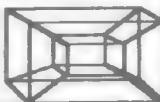
*DeskMate 3*.

I wish I could graphically depict here in this article what my desktop looks like now. It is neat, functional, and fits my particular needs. Of course what I have may in no way approximate your wishes or needs. That is why customizing your own desktop is so important. Set it up the way YOU want it. If you don't like it, do it over. Or delete the *DESKTOP.CFG* file and rerun *DeskMate* to get back to the original settings. It's so easy. And you really can't mess anything up. *DeskMate* is a very forgiving environment.

In my next article I will be taking a closer look at some of the standard programs and files which come with *DeskMate*. We will be looking at *ADDRESS*, *CALENDAR*, and *FILER*.

NOTE: Unless otherwise stated, all quotes contained in this and future articles are from the book, *Getting the Most Out of DeskMate 3*, by Michael A. Banks, a "Brady" book, published by Simon & Schuster, Inc., 15 Columbus Circle, New York, NY 10023, Copyright 1989 by Michael A. Banks.

BY GEORGE!



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## COMPATIBILITY:

Tandy 100/102, 200; others with modifications.

# Car Navigator

*Continuously monitor your position with your Tandy portable as you cruise along the highways!*

*by William F. Green*

**T**he interstates are lonely places when you're traveling long distances. Have you ever wondered just where you are as you breeze along your route? And how much farther you have to drive to reach the next rest stop or exit? Well, wonder no more. This program will show you just where you are at any time, how far it is to the next town, where the next rest stop is, and even the next exit. It also tracks your running time, how much fuel you have used so far, how much remains, and how many miles you have traveled. All this information is presented on the display of your Model 100, 102, 200, and similar computers.

Photo 1 shows the computer mounted on the dashboard of my motor home, monitoring my position as I travel. You can make a similar mount for your vehicle, or just lay the computer in the passenger seat. The computer will be on for long periods of time, so you will need to turn off your automatic keyboard timeout with the *POWER CONT* command. You also will need either fresh batteries or an external power supply.

The computer displays a straight line map with distance markers, names of towns, and other landmarks of your choice. An arrow moves along this map to indicate your present location in real time. On each map section, 115 miles, you need to tell the computer your cruising speed and fuel consumption rate.

## WHAT IT LOOKS LIKE

Photo 3 shows the program in operation with a sample map loaded. Your start time is displayed at the top left. The finish time will appear in the top right at the end of the run. Next is a row of dots that show distance in increments of five

miles. Below these dots is an arrow that indicates your present position.

The line underneath the arrow is a map that represents the highway, with dark squares signifying towns and other symbols used for landmarks of various types (explained below). The next line gives the abbreviations for towns or other markers. Under the abbreviations, the distance to each of these markers is displayed. The next display line tells you the distance to two of the towns (selected when you made the map), the miles you've traveled, and your remaining fuel. (After you've passed the selected towns, their distance is shown as a negative number, the distance you would have to backtrack to get to them).

The last line shows the current time and the amount of fuel you've used so far on this leg of your trip.

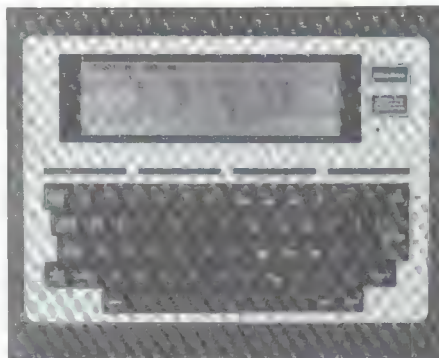


Photo 2. The Model 100 running the program with a map of a section of road between Wytheville, VA and Statesville, NC.

## THE PROGRAM

The program shown in Listing 1 is the frame of the system. It is complete except for the actual road map you need for your travels. You will see that lines 340 through 580, and lines 770, 780, and 790 are held blank with the *REMark* ( )

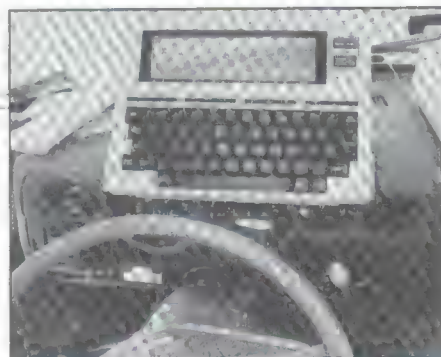


Photo 1. My Model 100 computer, mounted on the dash of my motor home, with the Car Navigator program running.

command. These lines are reserved for your maps.

The maps are separate *.DO* files that you merge into the main program as you start each leg of your trip. When you use the *MERGE "filespec"* command, the file you specify will load into those reserved lines in the main program, replacing any information already there without hurting the code shown in Listing 1.

Not all the lines reserved for each map are actually *used* in every map, but each map must still contain *all* the lines. Lines not used are held blank with the *REMark* ( ) command. This prevents lines from other maps accidentally being kept in the program along with the new map's lines.

## Techie Details

If you look very closely at your display, you will see that it is made up of small square dots. Each dot is called a pixel. Each character on your display is six pixels wide and eight pixels high. Because the Tandy 100/102 display is forty characters wide by eight lines high, this means the display is 240 pixel columns wide by 64 pixel rows down. The *Car Navigator* program only uses the top seven lines of the display.

Each character's space has a number that determines its row and column. For



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example, to locate the letter "C" two columns from the left side and four lines down from the top, you use the position number 81. To print a character at this position, the command is `PRINT@81," "`, where the character you want printed is placed between the two quotes (e.g., `PRINT@81,"C"`). The characters used are taken from the ASCII Character Code Table in the back of Tandy manual. This table lists all the possible letters, numbers, and symbols that can be used in your computer. You can, naturally, use any symbol you want in your maps.

Continuing our example from above, to place the telephone symbol at position 81, you would type: `PRINT@81,CHR$(239)`, or optionally, you could type `PRINT@81," "` and press the `GRPH-p` keys instead of the spacebar between the set of quotes. This is how the various map characters are positioned.

The program for the map on the computer shown in Photo 2 is in Listing 2. This shows a section of Interstate Route 77 going south in Virginia and North Carolina. Specifically, it shows Wytheville, VA; Hillsville, VA; a rest stop at the North Carolina line; Elkin, NC; another rest stop; and Statesville, NC. I used ASCII character 176 (double-bar Y) for the rest stops, number 135 (block with T) for large cities, character 239 (solid block) for towns, and character 245 (vertical line) for intersections.

### MAKING A MAP

First, get a map of the route with distances marked between towns. Make a list of towns, rest stops, intersections, and other landmarks of your choice. Divide them into 113 mile segments. Each segment will make one computer map. Write down the mileage of each of these from the beginning of the list.

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These locations should be at least ten or eleven miles apart, or there won't be sufficient room to list their abbreviations on the line below the appropriate symbol. Pick the symbol you want to use from your manual and write down its decimal number (or the key presses to generate it on the display).

### These locations should be at least ten or eleven miles apart

Location markers use positions on the display screen from 80 to 118. Abbreviations for towns and other landmarks will use positions 121 to 158. The distance numbers use positions 161 to 198. Using a chart similar to the one shown in Figure 1, and using the five and ten mile markers on the display map, estimate the number for each line that will position that line's information correctly.

Next, type in the sample map file in Listing 2 in *TEXT*. Then, using the sample map as a guide, type in your own data. Remember to type in the apostrophe mark after any unused line numbers. List the two locations for which you want a running distance indication and place their distances in lines 770 and 780. In line 790 substitute the abbreviations for these two locations for the ones in the sample listed.

After finishing the map program, exit *TEXT* and enter *BASIC*. Load the *NAV5.BA* program. Next, merge your map file with the main program and make a test run of the program. Note any adjustments required and return to the map file to correct the positions of the markers, letters, and distances. Repeat this step until the map is correct.

When you finish your first map, start the next, giving it an appropriate name that won't overwrite the any other maps you have made. When you run out of *MENU* slots (each file is under 600 bytes, so you'll run out of slots before you run out of RAM).

### USING NAV5

Go into *BASIC* and load the *NAV5.BA* program. Next load the map you want to use with the *MERGE "filespec"* command. Then type *RUN*. The program



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```

25 'NAV VERSION 2.3.1-NAV4
26 CLS
27 FOR J=0TO800
28 IF INKEY$="Q" THEN 58
29 NEXT J
30 LINE(5,3)-(234,60),1,B
35 LINE(12,8)-(228,57),1,BF
40 PRINT@92," CAR NAVIGATOR "
42 PRINT@178," BY "
44 PRINT@211," WILLIAM F. GREEN "
46 FOR C=1TO1000:NEXT C
50 CLS
53 '
55 PRINT@93,"COPYRIGHT 1987"
56 PRINT@172,"WILLIAM F. GREEN"
58 FOR H=1TO800:NEXT H
100 CLS
110 INPUT"START MILES";S
130 PRINT"DIST. THIS LEG (NOT OVER 115 M
ILES)"
140 INPUT"MILES";W
150 INPUT "TOTAL FUEL AT START";K
160 INPUT "SPEED";A
165 G=A*.000199
170 INPUT "MPG";R
195 D=47359.6
206 I=((W+S)*2)+1
220 CLS
230 FOR Z=1TO238
240 PSET(Z,17)
250 NEXT Z
260 FOR T=5TO236 STEP 20
270 PSET(T,8):PSET(T,9)
280 NEXT T
285 FOR B=5TO236 STEP 10
290 PSET(B,8)
295 NEXT B
310 E=1/R
340 '
350 '
360 '
370 '
380 '

```

```

390 '
400 '
410 '
420 '
430 '
440 '
450 '
460 '
470 '
480 '
490 '
500 '
510 '
520 '
530 '
540 '
550 '
560 '
570 '
580 '
600 PRINT@1,"START"
610 PRINT@7,TIME$
620 FOR Y=1TO D
630 X=((Y*G)+(S*2))+1
650 PSET(X+3,10):PSET(X+4,10):PSET(X+5,1
0)
660 PSET(X+3,11):PSET(X+4,11):PSET(X+5,1
1)
670 PSET(X+3,12):PSET(X+4,12):PSET(X+5,1
2)
680 PSET(X+2,13):PSET(X+3,13):PSET(X+4,1
3):PSET(X+5,13):PSET(X+6,13)
690 PSET(X+3,14):PSET(X+4,14):PSET(X+5,1
4):PSET(X+4,15)
700 PRESET(X+2,10):PRESET(X+2,11):PRESET
(X+2,12)
710 PRESET(X+1,10):PRESET(X+1,11):PRESET
(X+1,12)
720 PRESET(X+1,13):PRESET(X+2,14):PRESET
(X+3,15)
730 M=INT(((X/2)-S-.5)*10)/10
740 PRINT@223,"M=";M

```

Continued

Listing 1. The NAV5.BAS car navigation program.



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```

750 F=INT(M*E)
760 L=K-F
770 '
780 '
785 PRINT@241,TIME$
790 '
800 PRINT@231,"RES=";L;"G"
810 IF L<8 GOTO830
820 GOTO 840
830 PRINT@271,"FUEL LOW"
840 PRINT@263,"F=";INT(F);"G"
850 IF X>I GOTO 880
860 IF M>113 GOTO 880
870 NEXT Y
880 PRINT@24,"FINISH"
890 PRINT@31,TIME$
900 BEEP
910 END
    
```

End of listing.

```

340 'SM3S. WYTHEVILLE TO STATESVILLE N.C
.
350 PRINT@80,CHR$(135)
360 PRINT@120,"WYT"
370 PRINT@89,CHR$(135)
380 PRINT@129,"HIL"
390 PRINT@169,"26"
400 PRINT@95,CHR$(176)
410 PRINT@135,"RS"
420 PRINT@175,"44"
430 PRINT@102,CHR$(135)
440 PRINT@142,"ELK"
450 PRINT@182,"65"
460 PRINT@108,CHR$(176)
470 PRINT@148,"RS"
480 PRINT@188,"83"
490 PRINT@111,CHR$(135)
500 PRINT@151,"STV"
510 PRINT@191,"92"
520 '
530 '
540 '
550 '
560 '
570 '
580 '
770 P=INT(44-M-S)
780 V=INT(83-M-S)
790 PRINT@201,"DST RS";P;"RS";V
    
```

Listing 2. The sample map for making a run of 92 miles between Wytheville, VA and Statesville, NC.

begins with a brief title screen, then asks you several questions. The first is *START MILES?* The usual answer to this is 0 (zero). Next is *DISTANCE THIS LEG (NOT OVER 115 MILES) MILES?* Answer this with whatever is appropriate. Now the program asks *TOTAL FUEL AT START?* Type in the number of gallons you estimate you have. Following this is *SPEED?* Enter the speed at which you think you'll be moving, typically it will be 55 miles per hour. Finally, is *MPG?*, for miles per gallon. You don't have to be that accurate, rounding to tenths is perfectly acceptable.

When you press *ENTER* after this last question, the program starts the actual computations. I suggest you get everything

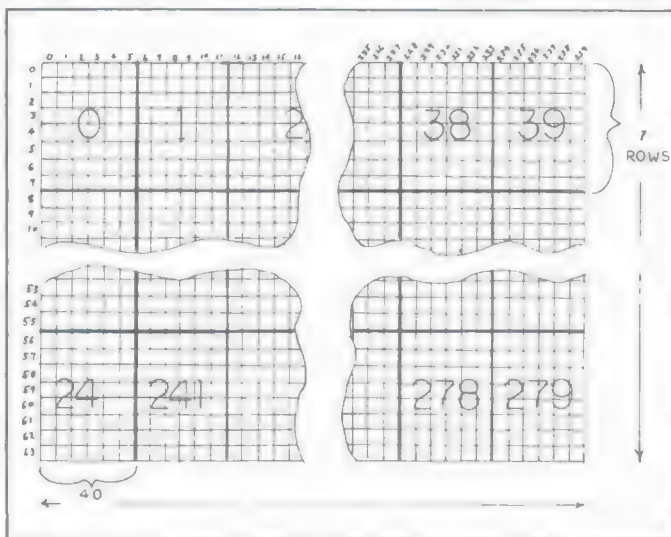


Figure 1. This illustrates the pixel grid design of the Model 100/102 display screen, and the numbering system used to position characters. Only enough of the display is shown to depict the system. To make your own chart, use some graph paper and fill in all the numbers for the complete display.



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Surely you've heard of the "Dvorak Keyboard." Named for its designer, Dr. August Dvorak, this super-efficient keyboard layout increases typing ease and speed while reducing errors and fatigue.

But did you know that Dr. Dvorak also designed one-handed keyboards? Using the same efficient design principles, his one-handed keyboard layouts make typing much faster and easier for people who have the use of only one hand.

Now you can have these one-handed keyboards on your Tandy notebook computer! Tri-Mike Network East, developer of the *Dvorak Keyboard System* for Tandy/NEC notebook computers, has developed software to implement Dvorak's left- and right-handed keyboards on these notebook machines.

Like the original two-handed *Dvorak Keyboard System*, the one-handed software uses only a few hundred bytes of the computer's memory, and is simple to use—just run the installation program once, rearrange the keycaps, and you're done.

The software remains invisibly in place, and works full-time—in *TEXT*, *TELCOM*, *BASIC*, user and commercial programs, etc. Your computer acts like it came right from the factory with a one-handed keyboard. And you can instantly switch between the one-handed layout and the original (two-handed QWERTY) layout just by pressing a key.

The price of the new *One-Handed Dvorak Keyboard System* is the same as the original *Dvorak Keyboard System*, \$36.95 on Tandy PDD-1 diskette, \$39.95 on cassette tape. (Prices include shipping and handling.)

To order, or for more information, contact the distributor: **Granite Street Portables, P.O. Box 651, Peterborough, NH 03458**. Be sure to specify computer type, right-handed, left-handed, or regular two-handed.

A company called Keytime teaches typing "In One Hour" using the *Dvorak Keyboard System* and the *One-Handed Dvorak Keyboard System*, in addition to standard keyboards. (We hear it's quite effective!) If you're in the Seattle area, you might want to contact them. For more information contact Keytime, 3147 Fairview East, Suite 200, Seattle, WA 98102-3041; Tel. (206)324-7219.

Circle 32 on reader service card.

## PROGRAMMING

```

340 'THIS LISTING IS USED TO CLEAR THE N
AV5 PROGRAM OF MAPS
350 '
360 '
370 '
380 '
390 '
400 '
410 '
420 '
430 '
440 '
450 '
460 '
470 '
480 '
490 '
500 '
510 '
520 '
530 '
540 '
550 '
560 '
570 '
580 '
770 '
780 '
790 '
    
```

Listing 3. A simple file to erase the any previous maps in NAV5.BA.

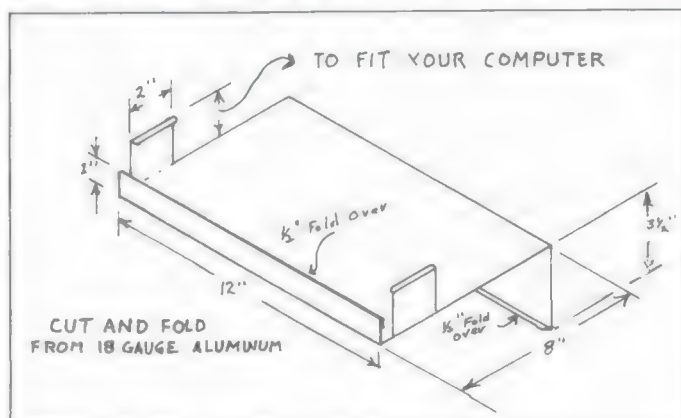


Figure 2. A sketch of the bracket I used to hold my Model 100 on my dash.

prepared up to this point and press *ENTER* only as you leave the on-ramp to the highway.

How accurate the program is depends on how steady your speed is. If you have cruise control, that's not a problem. If you don't have cruise control, just be aware of how fast you are traveling. If you find that conditions indicate a faster or slower speed for part of the leg, just hit the *SHIFT-BREAK* keys and stop the program. Restart it at the beginning distance set to your present location and enter the new parameters. This is why the program asks you *START MILES* at the beginning.

This also is the way to handle unplanned rest stops or snack breaks. After stopping the program, just jot down the mileage, reserve, and fuel used (and perhaps the start and present times). After your trip, compare your mileage computations with what you told the program to see how accurate you were. If the numbers start to vary dramatically, maybe your vehicle needs a tune-up.



**COMPATIBILITY:** Model 100, 102, and 200.

# Node Utility Mini-Extravaganza!

*Here are two special programs for Node Datapac/RAMPAC users.*

*by Paul Globman*

**H**ere are two nifty utilities for Node Datapac/RAMPAC users. Both require my RAMDSK.CO software, which lets you use your Datapac/RAMPAC without the RAM+ ROM, freeing your computer to use other ROM's. For the Tandy 200, XOS-C is also required. [Editor's note: See ad on p. 18].

## SAVE.NOD

For Model 100/102 users, the SAVE.NOD utility lets you save files to the Node Datapac/RAMPAC directly from the M100 menu. Simply select the file to be saved with the M100 widebar cursor, type SAVE.BA and press ENTER.

SAVE.BA (Listing 1) and RAMDSK.CO must be in RAM. SAVE.BA can be converted to SAVE with the CMD.BA utility described in last month's issue (GLOBAL PERSPECTIVES, Nov. '90).

## TELNOD.CMD

For Tandy 200 users, TELNOD.CMD integrates the operation of TELCOM with RAMDSK.CO and permits you to fully access the Node Datapac while on-line with the internal modem, without losing the carrier!

This greatly expands the amount of memory available for uploads and downloads while using the internal modem. It uses RAMDSK.CO to access the Datapac while on-line and utilizes XOS-C.

XOS-C/RAMDSK users can now choose between the on-line bank switching of XOS/XTLCM3's F7 or, by running TELNOD.CMD, F7 direct on-line access to the Datapac. (And TELNOD doesn't affect XOS-C's F6 enhancements!)

## SET-UP

To create TELNOD, go into BASIC and type in the program (Listing 2). Save the code as TELNOD.BA and make a backup copy. XOS-C must be installed and RAMDSK.CO must be in bank 3. TELNOD.BA can be renamed as CMD>.BA or anything else but must also be on the menu in bank 3 to operate properly. TELNOD.BA is 405 bytes long.

```
0 REM SAVE.NOD (c) 1990 by Paul Globman
1 A=64929+2*PEEK(65006):A=PEEK(A)+256*PEEK(A+1):FORX=3TO10:F$=F$+CHR$(PEEK(A+X)):NEXT:F$=F$+CHR$(13)+CHR$(13)+"Y"
2 A=65450:POKEA,11:FORX=1TO11:POKEA+2*X,0:POKEA+2*X-1,ASC(MID$(F$,X)):NEXT:CLEAR99,61681:LOADM"RAMDSK":CALL61896
3 CALL62061:CLEAR0,MAXRAM:X$=INKEY$:MENU
```

Listing 1. SAVE.BA saves files to the Datapac/RAMPAC directly from the Model 100/102 main menu.

## OPERATION

Run TELNOD.BA using XOS-C's F3 (CMD>) function key. TELNOD clears RAM space for RAMDSK.CO, loads it into HIMEM from bank 3, and then goes to TELCOM.

Dial-up as usual. Once you are on-line, function key F7 will take you directly to RAMDSK.CO. After incoming data stops, either at a prompt or after using a CTRL-O or CTRL-S, simply press F7 to access the Datapac, where you can move files to/from RAM, rename, etc. When you've finished with the Datapac press F1 (now labeled Term) to return on-line and, when the regular Term label line displays, you can continue where you left off.

```
0 'TELNOD.CMD(c)1990,R.Hess&P.Globman
1 A=59778:IFHIMEM-ATHENCLEAR0,A:CALL4117
9:X$="3:RAMDSK.CO":CALL63600,8,VARPTR(X$):IFPEEK(61302)=0THEN3
2 IPL""A=-738:POKEA,1:POKEA+1,7:POKEA+2,255:CLEAR0,MAXRAM:NEW
3 FORX=0TO59:READY:POKE59778+X,Y+X:NEXT:CALLHIMEM
4 DATA33,83,99,31,11,233,27,107,101,25,7,227,21,150,219,19,45,228,15,168,213,13,43,222,9,153,207,7,223,204,175,222,63,0,45,209,-2,28,207,-6,128,115,-8,18,201,160,-46,-47,157,50,29,154,25,26,151,65,43,148,31,20
```

Listing 2. TELNOD.BA gives the Tandy 200 direct access to the Datapac/RAMPAC while on-line in TELCOM.



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## Four Model 100 Books!

☆ **The Model 100 Program Book** by Terry Kepner and David Huntress. 51 useful BASIC programs for home, office, and education: bar graph, depreciation, annuity, pie chart, forms creation, invaders game, memory scan, touch typing tutor and many others—\$19.95.

☆ **60 Business Applications Programs** for the TRS-80 Model 100 Computer by Terry Kepner and Mark Robinson. 60 powerful programs for interest calculations, annuities, depreciation, invoices, breakeven sales analysis, and more—\$21.95.

☆ **Inside the Model 100** by Carl Oppedahl "an excellent Guide"—New York Times. A thorough guide to the Tandy Model 100. Learn about A.L. programming; disassembled ROM routines; keyboard scanning; UART, RS-232C, and modem; Clock/calendar chip; Interrupt handling; 8085 instruction set—\$21.95.

☆ **User Guide and Applications for the TRS-80 Model 100 Portable Computer** by Steven Schwartz. 14 ready-to-run programs for business: statistics, graphics, sound, and more. With cassette tape—\$44.95. Buy them separately—the book is only \$21.95; the cassette tape is only \$27.00.

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Please allow six to eight weeks for delivery.

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## USAGE TIPS

Remember that **F6** will show you Bytes free while on-line, and **SHIFT-F6** takes you to **TEXT** for editing RAM files while on-line.

Stop your download with the **F2** key before accessing the Datapac. Failure to turn **F2** off will cause the "bytes-free" function of **F6** to return an inaccurate value. (Subsequent download to the same-named file followed by **F2** off should restore accurate **F6** operation, but repeated Datapac access without first turning **F2** off may cause **TELCOM** to abort all downloads.)

If you're downloading and don't mind "losing" a few bytes, then

# PostScript<sup>™</sup> for the LP 1000!

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in your  
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Phone: 602-997-1523 © 1989 TMO

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ous download to that file and restore RAM for the next use.

Many information services will hang up after a while if you don't remind them you're still around. And remember: the "meter" is still running while you're using the Datapac.

Don't move .BA files from the Datapac into RAM while on-line!

When you've finished with **TELCOM**, exit **Term** and **TELCOM** as usual with **F8**. The main menu will display briefly, clear, and then redisplay. **TELNOD.BA** has now removed both itself and **RAMDSK.CO**, restored **HIMEM** to 61104, and reset all hooks to the **XTLCM3** values used by **XOS-C**.

Paul can be reached by modem on CompuServe (72227,1661) and Genie (P.GLOBMAN), or by mail at 9406 N.W. 48th St., Sunrise, FL 33351 (please enclose SASE if you're requesting a reply).

simply keep an eye on the **Down** label and send a **CTRL-S** when you see the download **Aborted** (RAM full) message. Press **F7**, save the file to the Datapac, and press **F1** to return on-line. (Don't forget send a **CTRL-Q** to restart the data flow!) Since **RAMDSK** only needs one to two seconds to copy 17K of data to the Datapac, this is probably the fastest way to download a lot of message traffic or what-have-you.

You might find it helpful to use the same name for all downloads (e.g., **TMP**) and simply save that file to the Datapac with more meaningful names. Subsequent downloads to **TMP** will, of course, "kill" the previ-



## Bend/Flex Formable Laminate EPROM Adapter

Using BEND/Flex formable laminate, Electronically Monitored Ecosystems of Berkeley, CA has developed an adapter which allows the use of standard 27C256 erasable, programmable read-only memory (EPROM) chips in the Tandy Model 100 family of computers.

This adapter fits like a saddle over a read-only memory chip and adapts it for use in the unusually-wired socket in Tandy laptop computers. Called "Rombo," this device provides up to 32K of additional code space to the computer.

United Printed Circuits of Huntsville, AL, fabricates the BEND/Flex circuit. EME then bends the legs of the circuit on a special jig. "The



The ROMBO adapter from EME allows standard 27C256 EPROM chips to work with the Tandy Model 100 family of computers.

BEND/Flex material is easy to bend, and once bent, it stays in place," said Tracy Allen, President of EME.

BEND/Flex material is a copper-clad epoxy laminate. Developed for use in three dimensional circuitry, this material can replace two or more rigid boards and their associated interconnections. It also replaces flexible circuits used in static (nondynamic) applications.

For more information on the ROMBO adapter,

please contact Dr. Tracy Allen, Electronically Monitored Ecosystems, 2018 Parker St., Berkeley, CA 94704, (415) 848-5725. Or circle #61 on reader service card.

For more information on BEND/Flex products, please contact the Marketing Communications Department, Rogers Corporation, One Technology Drive, Rogers, CT 06263. Or circle #62 on reader service card.

## External Laptop Hard Drive

The new Export "S" Series external laptop hard drives from Systems Peripheral Consultants offer high performance 3.5-inch external SCSI drives, with access speeds as low as 15ms and a measured transfer rate of 300 kps. Imagine loading a 1 MB file in three seconds on your computer. No-tool one minute installation, leather case option, battery (four to six hours continuous) option, lightweight (1.2 to 2.2 lb.), one year warranty, and the Export



The Export Series "S" 3.5-inch external drive for laptop computers.

"S" connects directly to your expansion bus, not to speedless serial or printer port. Models available include 45, 90, 135, 182, and 207 MB.

Price not given. For

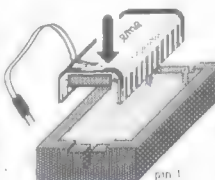
more information, contact SPC, 7950 Silverton Ave., #107, San Diego, CA 92126, (619) 693-8611. Or circle #60 on reader service card.



Enhancements for your 100/102/200!

**extRAM** is a 32K byte read/write memory expansion that fits into your Tandy's internal option ROM socket, 100% portable!

extRAM fits into the option ROM socket in the 100/102/200. A quick 2-pin plug connects extRAM to battery and WR lines. all under the snap-on cover. Easy to install.



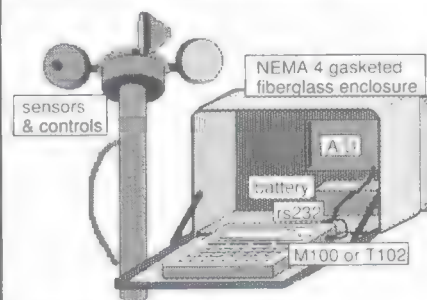
As a **RAM-file-bank**, you can double your space for .DO, .BA and .CO files. Our new, improved system software hides in the extRAM itself. It offers you new, exciting capabilities, and it is cold-boot proof too! Adapted from original software, **SLX** and **EXTBAS**, © 1989 by Paul Globman.

As a **ROM-file-bank**, or **emulator**, you can load extRAM with the kind of software that normally resides on ROM chips. But no more physical chip swapping! You swap in new ROM images on command, from files stored on disk or RS232. Software R2D2X © 1990 by Wilson Van Alst.

The software comes with each extRAM in the form of listings in a 38 pg. manual. A program disk or tape is also available, to save typing..

extRAM... \$75 ea. + tax (CA) + \$3/order ship.  
which model? M100 T102 T200  
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# **DEFUSR appears monthly to answer your questions about Tandy notebook computers.**

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P.O. Box 428, Peterborough, NH 03458-0428.  
Please enclose a stamped, self-addressed envelope for our reply.*

## **DO-IT-YOURSELF RAM**

I recently acquired a Tandy 100 with 8K of RAM. I bought the specifications book from Tandy and have concluded that it should be a relatively straightforward task to upgrade memory.

I have located the three IC slots, but I cannot get the chips. The cross-referenced memory chip would not fit (The socket was too wide for the chip).

I am quite sure that you have published instructions as to how to upgrade the memory without going to Radio Shack for the chips. I do not know which issues this was covered in, so I do not know which back issues to order.

**Michael Jones  
Houston, TX**

*Sorry, but we never had a project on adapting your own 8K RAM chips for upgrades. The original Model 100 chips were just too difficult for an amateur to make. They were actually four 2Kx8 CMOS chips mounted on a special carrier. Positioning and soldering the four chips on the substrate (two on top, two on the bottom) is far too delicate for anyone but a professional at working with chip substrates. The Model 102 chips aren't as stringent, but as you found out, require a certain chip only. You probably could find a carrier substrate to fit the chip and make it fit the socket, but I'm not sure that your "cross-referenced" chip is an exact electrical match. Rather than go through the trials and tribulations (and uncertainty) of buying those chips and performing the required modifications, you should call Purple Computing or Club 100: A Model 100 User Group, both of whom sell the proper chips inexpensively (you would, in the long run, end up spending more than their RAM prices in time and shipping charges). Both companies advertise with us.*

-TK

## **HOW TO LOAD P100-TO-GO?**

I am a current subscriber to both *Portable 100* magazine and *P100-To-Go* software disks. I am quite happy with both. However, I have a problem.

Most of the software received in the *P100-To-Go* program is of curiosity only, so I don't actually load it into my system. However, there are games and goodies that I would like to play with, if I could.

## **The cross-referenced memory chip would not fit.**

My problem is that I need to know the steps to properly load the software into my system. I was given a thorough walk-through of the procedure over the telephone some time ago and apparently didn't take good enough notes or practice frequently enough, because I have now forgotten the sequence.

Would you be kind enough to lay out step-by-step keystrokes to load these gems? It would be greatly appreciated. In addition, I would increase my use of my Model 100 and increase my enjoyment of the magazine and the disks.

My system consists of a Model 100 with eight 32K banks of RAM from PG Design and a Tandy 100K Portable Disk

Drive. The OS is *Power DOS* from Acroatix Inc., and the 100 is *Super ROM* equipped from PCSG. I also have the 6 ROM battery pack from PCSG, although I use it only for the extended battery. Other major software used in it is *TMPC*, also from Acroatix.

Two or three banks are available to "play around with" if I had the confidence to load the programs from *P100-To-Go* disks.

**Art Gillman  
Sun Valley, CA**

*Okay, that's an easy one. Here we go:*

1. Load your DOS (or go to the bank containing it),
2. Turn on the disk drive and connect it to your computer (make sure the drive is either running off the AC adapter or has fresh batteries in it),
3. Put the *P100-To-Go* disk in the drive and close the drive door,
4. Ask the DOS for a directory of the disk,
5. Select the program you want to load (make sure you have sufficient available room in RAM for the program before you do so),
6. Load the program into RAM,
7. Exit the DOS and enter BASIC,
8. Type `LOAD "filename"` where filename is the name of the program in RAM (you do not need to type the .DO extension because all the files on the *P100-To-Go* disk are in .DO format). You will see the Wait message appear on the display, and it will flash as it loads each line of the .DO file),
9. When the program finishes loading, the Wait message disappears and an Ok message appears,
10. Type `SAVE "filename"` to save the file as a BASIC program (you do not need to type a .BA or .DO extension). You now have two versions of this program in



RAM: the .DO file and the .BA program. Kill the .DO file, as it's no longer needed and simply wastes RAM space (type KILL "filename.DO"),

#### 11. Type RUN to execute the program.

And that's all there is to it. If you like the program, use your DOS to save the .BA file to disk; that way you won't have to repeat the loading procedure outlined above. You can just load the BASIC program and go to work (or play, as the case may be).

Now then, as to what these different programs on the disk do, you'll notice a file on your disk called README.DO. This file is a list of the files on the disk. The listings from the magazine are listed with their real names given beside the names used on the disk.

The first file you should load is the README.DO file. Do not try to load this into BASIC; just load it into your TEXT program and read it, taking whatever notes you think are necessary for loading the programs you find interesting.

-TK

#### SORTING YOUR FILE

Do you know how I may sort with my Model 100 such that it will open a file and dump all of the desired material to that file?

The existing sort program works beautifully for my style and purpose, being able in NOTE.DO to key items with some symbol and have SCHEDL with the Find or the Lfind command bring forward only those "paragraphs" which contain the symbol forward . . . but I don't know how to get the computer to create a file of sorted material instead of, or in addition to, either displaying on the screen or sending it out to the printer . . . and I would dearly like to so have it!

I use NOTE.DO as a means of randomly capturing my flowing stream of consciousness, simply starting a new paragraph with a new thought . . . and later can go back and place some symbol for parceling out the thoughts to categories for further organization. Unfortunately, I currently have to individually go through laborious cut and paste techniques in order to end up with files of grouped thoughts. Having just finally read through my collection of Portable 100's for the past year and a half, I've found all sorts of new hopes for new uses of my already loved Model 100 and have hope that I can yet find this answer.

To give you a better idea of what I want (hoping it might give you alternate ideas for accomplishing my goal if what I want isn't possible), here is an example:

\*M find more music scores for Hispanic groups

\*C see if peripherals for Model 100 will be available for my program

\*F invite folks over for dinner soon

\*C see if they have the part in California for the transformer

\*M play the organ for the nursing home

Calvin L.R.  
Rosenberg  
St. Petersburg, FL

You are in luck! If I understand you properly, you want to take an unsorted, randomized file where every line starts with a special key symbol, and end up with a sorted file where all the keys are grouped together.

If that is indeed what you want, then your answer is on CompuServe. Wilson Van Alst has a program there, ZIPSRT.100, you can download into your Model 100. The program will take the text file you designate and sort it in place! It sorts by paragraph (where a carriage return delineates each line sorted), where the paragraphs are not limited as to length.

The down side to this is that you no longer have your original file. The up side is that you don't need to have as much available RAM as the original file in order to do a sort.

On the other hand, if you want a program that will scan through your file and create a new file containing only those lines you've tagged with \*C, for example, then you need a program called ZIPFYI (as in For Your Information). After prompting for the name of the file to search and the string to find, it copies all records containing the search string into a file called MATCH.DO. It only copies the records; the original file remains unchanged. Furthermore, you can specify another search string, and those matching records will be appended to whatever already exists in MATCH.DO.

The programs on CompuServe are BASIC programs in TEXT format for easy downloading. Once you have one of them in your computer, running it creates a machine language program in the alternate LCD buffer (the space normally used only when you press the Previous function key while in TELCOM). This means the program doesn't



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use any of your precious RAM space while executing.

You'll find these programs, ZIPSRT.100 and ZIPFYI.100, in Library 7 (Utilities) in the Model 100 SIG (at the CompuServe "!" prompt type GO M100SIG, then follow the prompts to the database libraries). The instructions for the program are in the same library, called ZIPSRT.DOC. (For Model 200 users, versions called ZIPSRT.200 and ZIPFYI.200 are available in Library 10).

-TK

#### LOSING IT WITH INTERACTIVE SOLUTIONS

I recently acquired a ROM program called *Interactive Solutions*. It contains three programs: a word processor, database, and spreadsheet. I found it at the Tandy surplus store in Ft. Worth. Incidentally, that is a good place to get some bargains if you are in the area.

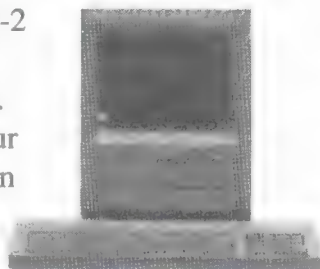
I followed the directions and plugged in the module. When I turned on my Model 102 I found that all my resident files and programs were gone. It was like turning off the switch on the bottom of my computer. I double-checked it and sure enough the module caused it. There is nothing in the manual warning of this, nor is there anything in my user's manual. It was a minor catastrophe. Losing files doesn't make one's day. I am writing this to warn others of this. I had never



# WPduet

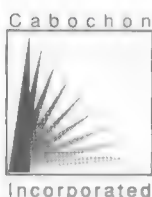
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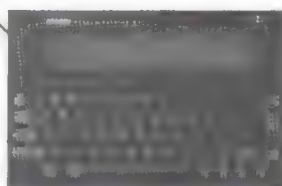


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seen this program before. Can you tell me anything about it?

**Eugene Masse**  
New Rockford, ND

*Yes, you were had. The Interactive Solutions manuals were poorly written and should have included a warning to the users to back up all files before attempting to insert and use the chip.*

*This is not a common problem with the other option ROM chips on the market (Super ROM, Ultimate ROM II, Cleuseau, etc.). Only the Interactive Solutions chip does this in installation.*

*The Interactive Solutions chip was designed for Tandy and marketed lightly by them in the beginning of the Model 100 product cycle. There is a review of the chip in the November 1985 issue of Portable 100, "Tandy's ROM" by Carl Oppedahl. Back issues are available for \$5.00. We also have available (for only \$9) an article index that covers all issues printed from September 1983 to September 1989, which is where I looked up the location of the Interactive Solutions review. See the advertisement on page 7 for details.*

-TK





COMPATIBILITY: Tandy 100/102; others with variations.

# Model T Memory Management

## *Boring Stuff You Need to Know*

*by Mike Nugent*

**B**y now you've had time to play with *CHDUMP.BA*, my "packed" BASIC version of George Flanders' *DUMP.CO* (both in *Portable 100*, May '90), and I hope you've found it easy and useful. Moreover, I hope you've found and corrected the error in the program listing (line 400, change *L0* to *L10*). It works much better that way! Now let's start from the beginning and see how *CHDUMP* and similar programs evolve.

### THE BASICS

If we're going to embed machine language inside a BASIC program, we must first understand how our Model T's memory is managed. I'll refer specifically to the Model 100/102 here; Tandy 200, NEC 8201, and others work the same way, but addresses will differ.

The memory map (Figure 1) shows that the first 32K of memory (addresses 0000-7FFF) is the Model 100's ROM, containing the computer's operating system (OS) and built-in programs. The remaining 32K (8000-FFFF) is RAM memory.

Files are stored lowest in RAM, starting at 8000, followed by variables and arrays, free RAM, the stack area, string space, file control blocks (FCB's), and any RAM reserved by the *HIMEM* pointer. Above that, the computer reserves F5F0-FFFF for its own use as a scratchpad area, protecting it with the *MAXRAM* pointer, which the OS views as a "ceiling," allowing no user program to use RAM from there on up.

The free RAM area ("pool" as I like to call it) is just that—RAM that's currently unused. This pool shrinks and grows as changes occur above and below it. Let's make some changes above it and see what happens.

For example, if we increase the size of

the *HIMEM* area by 100 bytes (by lowering the *HIMEM* pointer), the FCB's, strings, and stack all move downward to make room. The top boundary of the pool in turn becomes 100 bytes lower, and since the bottom boundary doesn't change, we're now left with 100 fewer bytes in the free RAM pool. Similarly, if

---

## The Model T stores files using an essentially bottom-up approach.

---

we clear more string space, the stack moves downward an equal amount to make room, again lowering the top boundary of the pool and leaving that much less free RAM.

Conversely, if we raise the *HIMEM* pointer or clear less string space, things move upward, as does the pool's top boundary, thereby increasing free RAM.

What happens when changes occur below pool? Simple—the bottom boundary changes instead of the top boundary. When we add another file, increase the size of a file or an array, or assign more variables, the pool's bottom boundary moves upward (the top stays put), leaving less free RAM. Kill a file,

delete some character from a file, shrink an array, or use fewer variables, and the opposite happens—the bottom boundary is lowered, giving us more free RAM.

### KEEPING TABS

Because the area above *MAXRAM* is "sacred" and protected, the computer always knows exactly what's where in the *MAXRAM* area. Various pointers contained there are continually updated and used to track all the other areas and their dynamic boundaries. That's how the Model T manages to hold everything in RAM, under constantly changing conditions, and not lose track of it.

With *MAXRAM* keeping tabs on things, and the free RAM pool acting as a "shock absorber," insulating the RAM below it from changes above it (and vice versa), we're free to focus our attention on the files in low RAM without concern for what's going on "upstairs."

### FILE STORAGE

The Model T stores files using an essentially bottom-up approach, wherein new files are saved as low as possible in RAM, pushing existing files upward to make room. When a file is killed, files above it move downward to fill the gap. (Yes, variables and arrays, being below the free RAM pool, also move upward/downward with the files, but since they're unimportant here, I won't mention them again.)

This overall bottom-up pattern is governed by a "group" heirarchy based on file type, with *.BA* files stored lowest in RAM, followed by *.DO* and then *.CO* files. Within these individual groups, the storage procedure varies slightly. Let's examine that.

Assume that we already have some of each type of file in RAM. If we now load a new *.DO* file, the OS inserts it above the



.BA files and just below the existing .DO files, pushing those .DO's (and the .CO's) upward to accommodate it.

When we add a .CO file it's stored, according to heirarchy, above the .BA's and .DO's. But unlike our new .DO file, it goes *above* existing files of its own (.CO) type.

A new .BA file, as per the heirarchy, goes below .DO's and .CO's. And like the

**That first .BA file  
will always stay  
put, tucked safely  
away at the very  
bottom of RAM.**

.CO, it goes just *above* the highest existing file of its own (.BA) type.

To summarize: Files are grouped in RAM by type, with .BA lowest, .DO next, and .CO highest. Within those groups insertion points vary: .DO's go *below* existing .DO's, and .BA's and .CO's go *above* existing files of their own type. When *any* file is killed, *all* files above it move downward to fill the gap.

This means that any file stands a good chance of being moved when another file is loaded, killed, or changed in size by editing. Any file, that is, EXCEPT ONE!

That sole exception is the very first .BA file saved in RAM. Files may come and go, shrink and grow, and move around above it, but that first .BA file will always stay put, tucked safely away at the very bottom of RAM. Unless you kill it, it never moves.

Hmmm ... might there be some advantage to this? Indeed there might! And we'll discuss it in detail next time around. Catch ya!

-Nuge

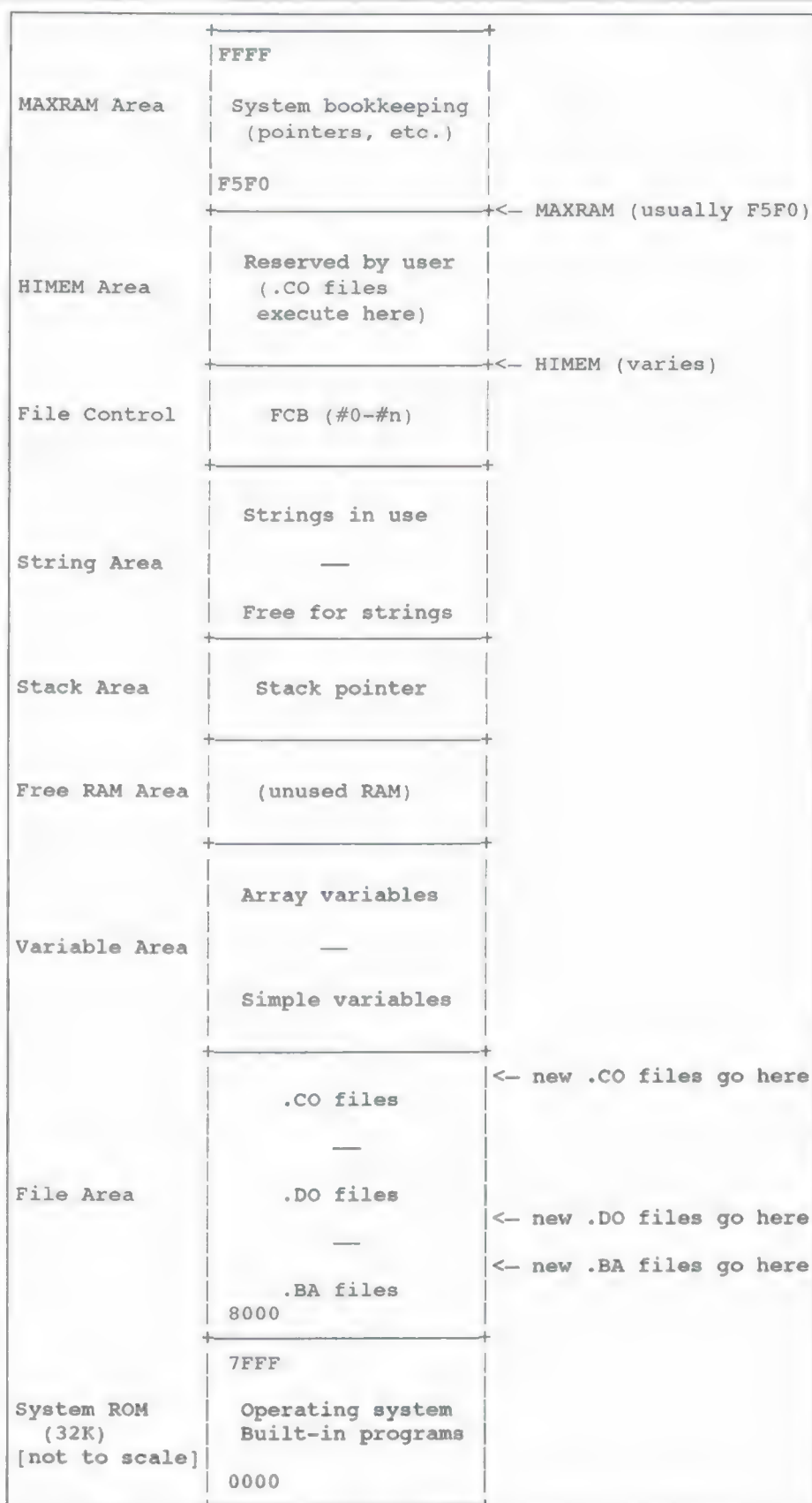


Figure 1. Memory map of the model 100/102. Other Model T's are similarly structured, but specific addresses are different.



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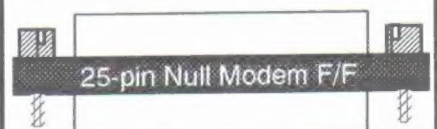
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**January:** DG has the One to Go, *Model 100 Proves Itself in the Jungles of Nicaragua*, Meet the Dulmont Magnum, *Telecommuter: Software that's Ingenious*, *Kyocera's Three Aces*. End Telephone Tag with M100's.

**February:** NEC Wishing upon Its Starlet, In-Depth Reviews of HP 110, Sharp PC-5000, *Chattanooga Systems AutoPen, AutoPad, Trip*.

**March:** Reviews of Epson Geneva and Osborne 3, Comparisons of Two Thermal Printers (Brother HR-5 and Printex TH-160); *The Pluses and Minuses of Batteries*, *M100 Data Acquisition*.

**April:** Reviews of Sord IS-11, Sharp PC-1350, *DISK+*, *T-BASE*, and *Roadrunner*; *Free Software: Textpro*, Technology Transfer Damming the PICO Pipeline to Russia.

**May:** Review of DG1, Which Spreadsheet Should you Buy? Servicing Picos, LCD Screens in Color, Federal Express.

**June:** Reviews of Tandy 200, *2.2 Companion*, and *T-Backup*, *M100 File Transfer*, Wrangler improves the Odds with Sharp PC-5000s, Dow Jones News/Retrieval On-line Database, *Courtroom M100's*.

**August:** Reviews of Datavue 25 and *Touchbase Modem*; QuickTrip Convenience Stores More Efficient, Tracing Tribal Roots and Translating the Bible in Jungles of Papua New Guinea.

**September:** Reviews of HP Portable Plus, *WriterROM*, *ThinWrite 80 Portable Printer*, A Flat Mac, *M100 Meets Challenges at Woods Hole Oceanographic Institute*.

**October:** Reviews of Kaypro 2000, *T-View 80*; Computerized Fire Department, Stretching the limits of Telephone and Computer, *BASIC translation Tactics*.

**November:** Reviews of Bondwell 2, NEC 8027A Printer, CQ Haste; *PICO Formatter*, Search and Rescue Via Computers, Industry Views from an HP Exec.

**December:** Close Look at Ericsson Portable and *TMPC (time management software)*, Travel Tips, Tricks for Traveling, *Dialer Program*, *Project management with the M100*.

## 1986

**January:** Reviews of Gridcase 2, Access, Word-Finder, and Prospecting, CP/M and MS-DOS, *Security Program*, Can Universities Cope with Picos? News from Comdex, *Jazz up your LCD*.

**February:** Reviews of ZP-150, and *LeScript Word Processing*; *Stevie Wonder Inspires Stardom in M100*, Can Universities Meet Expectations of

Computer-literate Students? *Cold-Start recovery, Personalized Form Letters*.

**March:** Reviews of Panasonic Exec.Partner, Lync 5.0, and *Hardwire*; University Rethinks its Tasks, Picos in Medicine, *Auxiliary Battery Packs Spell Independence*, *More Muscle for the M100*.

**May:** Reviews of Toshiba T1100, IBM PC Convertible, Casion FX-7000G Calculator, SG-10 Printer, *MIKEY*, *Appointment Manager*, and *FAST*, IRS Crowns Zenith's Z-171, Handhelds in Restaurants.

**June:** Reviews of Zenith Z-171, *LapCoder*, *SuperROM*, *LAPDOS*, and *BlackJack*; Go Shopping at PC in Rochester, NY, OM10 RAM Map (pt 1), A Tale of Two City Councils.

**July:** Reviews of Bondwell, ROM2, Letterjet HS-80, and Sidestar.; Electronic Cottage, Taking Stock of Investment databases II, NEC 8201A's LCD, OM10 RAM Map (pt 2)..

**August:** NH's Governor discusses Laptops, PC-7000 from Sharp, Choosing your test-oriented Database manager, *Model 100/200's Lend a hand to Job Seekers*, NEC-8201A's Communication Connection.

**October:** Reviews of Toshiba 1100+, New Word, *Diconix Printers*, Fortune 500 Picos, Interview with DG Exec's, Desktop publishing with Picos.

**November:** Picos in Libraries, *Clever M100 Combinations*, *Exploring TPDD Part I*, Reviews of Datacomputer 2.0, *TPDD*, *TS-DOS*.

**December:** Picos on Wall Street, Connecting to On-line Databases, Telephone Problems, *TPDD Part II*, Reviews of *Clouseau*, *French/German Tutor 3*, *Pocketsize Modems*; 1986 Article Index.

## 1987

**January:** Book Publishing With a Pico, *Framework in a Pico*, Review of Right-Writer, JK Lasser's Money Manager, HP+Enhanced, Electric Webster, *Disk Power*, Pico's Computer Buyer Guide.

**February:** *Poor Man's Idea Processor*, Macintosh-Pico Connection, *M100 Cursor key alteration*, Handhelds: HP-18C, Langenscheidt 8000, TI-74, Reviews of Sord IS11-C, *Lets Play Monopoly*, *\$100 letter quality printer*.

**April:** Browsing the Boards, Writers & Portables, KTI products, Badminton & NEC, Reviews of *Inside the M100*, *TTXPress Printer*, *PCSG Business Analyst*, *Datapad 84 Zoomracks* & ECFS.

**May:** Doctors with Portables, *Text to printer*, Hitting the Board **OUT** of PC Convertible Add-ons, Holiday **OUT** & Shout, *M100 memory Expansion*.

**June:** Lawyers & Laptops, *Personal Management System*, *M100/Mainframe Terminal Prog.*, Reviews of Wang Portable, *Search*, *Sprint* and *Supercalculator*, *Best of Compuserve* book, Chess-to-go.

**July:** Programming in the Portable Environment, Sysop interview, Talking portables (pt1), Portable Computer Buyer Guide, Reviews of *TS-Random*, *Software Carousel*, *Popcorn* & the Hyperion.

**August:** NEC 8201 tokens, Laptops in Movie filming, Talking Port **OUT** Reviews of Casio FX-8000G, Tandy 1400LT, and *System 100*.

**September:** *English Teachers use Laptops*, *Picos in Class*, *OUT* *templates*, *Picos in the Oil Patch*, Reviews of *ColorPro*, and the *Sportster 1200 modem*.

**November:** *Control That Printer*, *Academia & Laptops*, Laptops on Capital Hill, Starlet Secrets, Reviews of Psion II, *DVORAK keyboard*, & Spark.

**December:** Global Laptops, Starlet Software, Toronto Blue Jays & GRIID, *NiCd Notes*, Review of IMC LCD-286, 1987 Article Index.

## 1988

**January:** Portable Computer Cellular Communication, Laptop Roundtable, Pico Portable Guide. Reviews Telemagic, Direc-Tree Plus, SchwabLine, Quotrek.

**February:** TennyStat, Flexibility of Form, T200 and T16. Reviews Eclipse, T1100 Hard Drive.

**May:** Handhelds Fight Crime, A Pico in China, Compaq Port. III, Datavue Snap, Fax hits the Road, HP Portable Vectra, T1400LT, Three Pocket Modems, Close-Up's Customer & Support.

**June:** Multispeed in the Tropics, *Monitoring Alkaline Batteries*, PSION and Mass Storage, Datavue Spark, Smith Corona Portable Word Processor.

**July:** Toshiba on the Road, *Diskette Ratings*, *Metered NiCd Manager*, Procomm on the NEC, WordPerfect 4.2 on the T1000, Sales Ally.

**September:** Laptops & the Learning Disabled, WordPerfect 5.0, Dynamac EL, HP-71B, WordPerfect Executive, Webster's New World Writer II.

**October:** Portables at Sea, Macintosh Navigating, Piloting and Celestial Progs, NEC-8300, Compaq Port. 386, File Transfer, Golden Parachute.

**November:** European EMAIL, New Tricks for your Cassette Recorder, Pico Pillows, Amstrad PPC-640, Selecting the President, Sales Power, Sales Strategy, Office Writer goes Light.

**December:** FASTECH, Automating Your Sales Force, AI, ScriptWriter, LiteDrive, Homeword Plus, VP-Expert.